TRISTAN GUEST

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EDUCATION

Dalhousie University, Department of Oceanography, Halifax, Nova Scotia. 2020
Ph.D., Physical Oceanography.

Dalhousie University, Halifax, Nova Scotia.
B.Sc., Combined honours in Mathematics and Oceanography. 2013

POSITIONS

Chief Scientific Officer 2021 – present
Luna Sea Solutions Inc.

· Scientific lead, full-stack web and software developer

Chief Technology Officer 2020 – 2021
Luna Sea Solutions Inc.

· Technical lead, software developer

Graduate Researcher 2013 – 2020
Dalhousie University Department of Oceanography

· Thesis: *Morpho-sedimentary dynamics of a megatidal, mixed sand-gravel beach*
· Supervisor: Dr. Alex Hay

Undergraduate Researcher 2012 – 2013
Ocean Acoustics Lab, Dalhousie University Department of Oceanography

· Supervisor: Dr. Alex Hay

RESEARCH EXPERIENCE

Grand, Petit, and Minas Passages, Bay of Fundy 2020 – 2021
Scientist

· Various field campaigns focused on tidal energy site assessment and marine animal monitoring using multibeam sonar, echosounders, Doppler profilers, and UAV-based Lagrangian tracer tracking.

Advocate Beach, Bay of Fundy 2018
Scientist

· Mixed sand-gravel beach field campaign. Measured the coevolution of beach surface elevation and sediment mean grain size in the intertidal zone using precision GPS, camera imagery, and acoustic range sensors.

Aquatron pool tank, Dalhousie University 2018
Scientist

· Laboratory experiment. Used ceiling-mounted cameras and fluorescent tracer floats (particle tracking velocimetry) to characterize the velocity dynamics of a partially constrained turbulent jet at the air-water interface.

Atlantic Zone Monitoring Program (AZMP) Spring Cruise 2016
Research Assistant

· Sea time aboard CCGS Hudson. Obtained and managed water samples for dissolved gas analysis.

Advocate Beach, Bay of Fundy 2015
Scientist

· Mixed sand-gravel beach field campaign. Measured steep beach hydro- and morphodynamic processes using buried pressure sensors, video, and GPS.

Grand Passage, Bay of Fundy 2013
Research Assistant

· Field experiment. Carried out a geotechnical characterization of the seafloor and profiled turbulence in Grand Passage.

Advocate Beach, Bay of Fundy 2013
Scientist

· Mixed sand-gravel beach field campaign. Measured swash and surf zone hydrodynamics using pressure sensors and video, alongside a sediment transport measurement program.

Advocate Beach, Bay of Fundy 2012
Research Assistant

· Field experiment. Observed nearshore processes and sediment transport using acoustic methods.

PEER-REVIEWED PUBLICATIONS

In preparation:

Guest, T. B. and A. E. Hay, Morpho-sedimentary dynamics of a megatidal, mixed sand-gravel beach.

Published:

Guest, T. B. and A. E. Hay (2021), Small-scale morpho-sedimentary dynamics in the swash zone of a megatidal mixed sand-gravel beach. *Journal of Marine Science and Engineering*, 9(4):413

Guest, T. B. and A. E. Hay (2019), Timescales of beach cusp evolution on a steep, megatidal, mixed sand-gravel beach. *Marine Geology*, 416, 105984.

Guest, T. B. and A. E. Hay (2017), Vertical structure of pore pressure under surface gravity waves on a steep, megatidal, mixed sand-gravel-cobble beach. *Journal of Geophysical Research: Oceans*, 122, 153–170.

CONFERENCE AND INSTITUTIONAL TALKS

Guest, T. B. Investigating the role of grain size in beach morphological change: Insights from a megatidal mixed sand-gravel beach. *Dalhousie Oceanography Departmental Seminar Series*, 12 May 2020, Halifax, NS, Canada.

Guest, T. B. and A. E. Hay. Swash zone morpho-sedimentary dynamics on a megatidal, mixed sand-gravel beach. *11th River, Coastal, and Estuarine Morphodynamics Symposium (RCEM)*, 20 November 2019, Auckland, NZ.

Guest, T. B. and A. E. Hay. Cobble dynamics on a mixed sediment substrate. *Conference for Dalhousie Oceanography Graduate Students (CDOGS)*, 22 March 2019, Halifax, NS, Canada.

Guest, T. B. and A. E. Hay. Timescales of beach cusp evolution on a megatidal, mixed sand-gravel beach. *Conference for Dalhousie Oceanography Graduate Students (CDOGS)*, 23 March 2018, Halifax, NS, Canada.

Guest, T. B. and A. E. Hay. Timescales of beach cusp evolution on a megatidal, mixed sand-gravel beach. *Ocean Sciences Meeting (OSM)*, 14 February 2018, Portland, OR, USA.

Guest, T. B. and A. E. Hay. Vertical structure of pore pressure under surface gravity waves on a steep, megatidal, mixed sand-gravel-cobble beach. *American Geophysical Union (AGU) Fall Meeting*, 14 December 2016, San Francisco, CA, USA.

Guest, T. B. and A. E. Hay. Vertical structure of pore pressure under surface gravity waves on a steep, megatidal, mixed sand-gravel-cobble beach. *Bedford Institute of Oceanography (BIO) Ocean and Ecosystem Science Seminar Series*, 14 October 2016, Dartmouth, NS, Canada.

Guest, T. B. and A. E. Hay. Pressure response of a sand and gravel bed to water waves. *Conference for Dalhousie Oceanography Graduate Students (CDOGS)*, 18 March 2016, Halifax, NS, Canada.

Guest, T. B. and A. E. Hay. Mixed sediment beaches: Cusps and edge waves. *Conference for Dalhousie Oceanography Graduate Students (CDOGS)*, 20 March 2015, Halifax, NS, Canada.

INSTITUTIONAL ROLES

Current Tides Magazine 2018-2020
Editor-in-Chief

- Oversaw the production and launch of Volume 4 of the Dalhousie Oceanography student research magazine (http://currenttides.ocean.dal.ca/)
- Responsible for obtaining funding, managing a team of 11 authors and 7 editors, graphic design, orchestrating layout and print production processes, and hosting a launch event

Current Tides Magazine 2017-2018
Assistant Editor

- Provided editorial assistance in the production of Volume 3 of the Dalhousie Oceanography student research magazine

Oceanography 1000: Conversations with Ocean Scientists 2017-2018
Teaching Assistant

- First year science writing course
- Guided students through writing of original academic articles in weekly tutorials